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SCHOOL AND SOCIETY

EDITED BY J. McKEEN CATTELL

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EDUCATIONAL REVIEW

EDITED BY WILLIAM McANDREW

Volume XXX | SATURDAY, NOVEMBER 16, 1929 | Number 777

THE CONTRIBUTION OF THE AMERICAN COLLEGE TO OUR NATIONAL LIFE[1]

By Dr. JAMES R. ANGELL

PRESIDENT OF YALE UNIVERSITY

WE are here to celebrate the centennial of a brave and noble human enterprise launched on this spot a hundred years ago amid bewildering difficulties and with little but the sublime faith of the founders upon which to build. Into it has been freely poured the heroic and unselfish devotion of hundreds of men and women who have seen in it an ideal for which they were willing to make every sacrifice. There are few records of greater moral fortitude and tenacity in the face of repeated and disheartening frustration and of seemingly insuperable obstacles than are to be found in the history of Illinois College.

Situated at the crossroads of two great currents of fatally conflicting political opinion, later to plunge the country into the most terrible of its wars, the college was inevitably destined to suffer from the honesty of its convictions, and no skill or tact could have indefinitely avoided the issue. Its faculty was at the outset manned principally by men from the north, naturally entertaining northern sympathies. Its students, many of them drawn from the south and the border states, were often aggressively sympathetic with slavery and those governmental policies without which it could not survive. This circumstance alone would have created sufficient difficulties for any young institution to face. But, added to these, is to be counted the establishment at about the same time of other collegiate institutions at no very remote points, which, in a pioneer period of meager population, constituted a grave invasion of the limited student supply from which the college could hope to draw. Moreover, these colleges were, in general, less unfavorably situated with reference to the slavery-abolitionist schism. At times even more nearly fatal were sectarian religious conflicts, which to our generation seem largely gratuitous, and, in some instances, relatively unworthy. But they too, like the slavery issue, reflected conscientious conviction quite as much as a narrow and selfish denominationalism. As in so many other of our educational undertakings, the crying difficulty was always, and everywhere, financial. There are certainly few more tragic situations than those recounted by President Rammelkamp in his notable history of the college, in which he sets forth the extremes to which time after time the college authorities were reduced by sheer poverty. But with faith unbroken and courage undaunted, the college has at last

[1] Address delivered October 15, 1929, at Illinois College upon the one hundredth anniversary of its founding.

won through to final victory—a victory which in no sense implies surcease of all struggle for the fairer future just ahead, but one which does imply that never again, within the bounds of human prevision, need the college fear for its life or the continuation of its invaluable service.

It is the proud fortune of Yale to have trained many of the men who established this institution and literally built their lives into its foundations. The first president and several of his faculty were Yale graduates, as have been many of their successors. A representative of Yale may possibly be pardoned for exploiting such an occasion to call brief attention to her extraordinary record as a mother of colleges. From her halls came the first presidents—who were also, in many instances, essentially the founders—of Princeton, Columbia, Dartmouth, Williams, Hamilton, Wabash, Illinois and Beloit. The first of the state universities, the University of Georgia, also was founded by Yale men, and the first president was a Yale graduate, as was likewise the case with the University of Mississippi, the University of Missouri, the University of Wisconsin and the University of California. If one adds to these the first presidents of the great private foundations, Cornell, Johns Hopkins and Chicago, one has before him an impressive, though entirely incomplete, list of these instances. Needless to say, this history is a source of deep satisfaction to the mother college, but in no case has she greater pride than in the finally successful struggle against almost hopeless odds which characterized the early life of Illinois College.

The occasion seems an appropriate one upon which to venture some estimates of the position and accomplishment of the American college. To challenge some of the pleasant myths about the subject may savor a little of inviting Banquo's ghost to the feast, but disillusionment, if not indulged to excess, is sometimes a wholesome exercise, and in the end we may come to a juster sense of the real situation without finding that in essence our idols have really been dethroned.

The college has always followed fairly close behind the advancing frontier. The oldest colonial colleges came into being soon after the settlements they served were established, and, while they were inevitably feeble at the outset, they steadily gained in power and prestige. As the frontier pushed westward, the college came closely in the rear. Dartmouth, with its gesture toward the Indians, Williams, Union, Dickinson, Washington and Jefferson, may represent the movement. Then, as the great wave of migration swept into the Mississippi Valley, we find appearing the group of colleges of which Western Reserve, Wabash, Illinois, Marietta, Knox, Beloit and Grinnell are representatives. Closely contemporaneous with these developments was the active creation and expansion of the state universities, several of which had received charters at an earlier period, but none of which had previously made substantial progress. With their coming, however, a heavy shadow fell over the middle western colleges, the first fruits of denominational devotion and the missionary spirit, and their development has ever since been difficult. Whether the college has followed as closely the intellectual frontiers as it has those of a geographical character has sometimes been called in question. Certainly, like many educational institutions under our Anglo-Saxon tradition, the college has been a conservative, rather than a purely creative force. This has been at once its strength and its weakness, its glory and its reproach.

The earliest American college was frankly designed to recruit a literate ministry, and for several generations the New

England representatives at least had this as their principal aim and their chief achievement. To this end Hebrew found its place in the curriculum, that the Old Testament might be read in the original, Greek, that the New Testament might similarly be mastered, and Latin because it was the common language of scholarship the world over. The Greek classical authors appear appreciably later and at the outset with some clerical misgivings. But, as the tide of ministerial candidates slowly receded, the college came more and more to stress the ideal of a liberal education as the foundation upon which a cultured life might best be built, and, as the appropriate, if not essential, propædeutic for all the learned professions. And so, in our time, the liberal college has generally proclaimed its allegiance to objectives in which intellect and culture and character are the predominating elements.

It is difficult to devise methods for a just appraisal of the actual accomplishments of the college, although I make some suggestions with reference to the matter elsewhere in this address. But, so far as the public estimate is concerned, I think it may safely be said that, while in the first instance, the college has ostensibly sought intellectual distinction, it has mainly achieved social prestige. There is certainly, among the rank and file of our citizenship, only the most meager appreciation of scholarship as represented in the college, the most infrequent respect for it and the most tepid enthusiasm for its attainment. The scholar, as such, carries little weight in forming public opinion, unless his specialty has some technological bearing—and even then his judgment is suspect, if it clashes with that of the man of practical affairs. The college may justly insist that responsibility for this situation should be shared by all educational institutions. Nevertheless, it is, I am convinced, the actual situation and one which, in so far forth would indicate that the college, however intrinsically successful in developing the minds of its students, has not succeeded in greatly impressing the public with the intellectual and moral values which it stoutly maintains inhere in its training.

Over against these circumstances is to be set the extraordinary, and somewhat paradoxical, popularity of the college in our day as compared with earlier times. This popularity doubtless has many causes, among which a genuine appreciation of the cultural and intellectual values conferred is not negligible. Nor would it be easy to overestimate the effect of the unprecedented financial prosperity of the nation, though this circumstance affects the situation only in making possible the realization of an existing desire to secure college education. It does not in any way create this desire. But I think that no impartial and competent observer can doubt that the social prestige of the college is the most influential single factor. To be sure, the great war disclosed to many previously uninformed persons that the college man had a great advantage over his non-college brother when it came to finding officers for the army, and this discovery has unquestionably been reflected in the appearance at the college doors of many youths who a generation ago would never have thought of coming. Not that these young men are now aiming at a military career, but simply that they and their parents have been given an impressive object lesson as to the esteem in which an important group of practical men hold the college training. But even before that discovery, there had been rapidly growing for several decades a sense of social distinction, which, attaching at first to certain of the older and more aristocratic foundations, gradually spread to all reputable colleges, so that to be a college graduate—or at least a college man—

was an enviable and desirable lot. To be marked as incapable of entering college was distinctly inadvisable, though this rarely occurred, for, as soon as a strong market was developed, colleges began to flourish which could be relied upon not to inquire with too inhuman a curiosity into a candidate's fitness.

Humiliating as it may seem to the scholar who views the situation from the Olympian heights of the classical seminar, it is unquestionably a fact that many a youth has been willing to suffer the relatively slight and transient intellectual pangs incident to securing college entrance in order that he may later wear the pin of some Greek letter society, frequent its palatial home and disport himself at its not too arid alumni banquets; that he may become a member of the metropolitan club of Alphomega University, to say nothing, if he be an athlete, of having an opportunity to win, and thereafter drape upon himself, the university insignia, and to see his name in flaming headlines across the extras of the metropolitan press. All these blessings, be it recalled, involve his academic survival only long enough to achieve the bay leaves described. If he be headstrong, he may go on and graduate, but this is not necessary. Moreover, there is a widely prevalent conviction in the public mind, for which there is probably more than a little evidence, to which attention has often been directed, that college is perhaps the best place for the shrewd and persistent young man to make profitable friends and acquaintances who will introduce him to the right people socially and assist him in securing advantageous business opportunities when he leaves the college campus. Doubtless this motive is explicitly in operation in only a small number of instances, and it would be very unfair to college students as a group to impeach them on any such charges. But there is no question that the results mentioned are generally recognized as not infrequent by-products of college life, and in so far they therefore enter in to promote the prevailing atmosphere of public belief that the college not only affords a social experience, itself interesting and significant, but that it often leads to important social and economic consequences afterward.

There has been a bland and very human disposition on the part of the college to claim full credit for the careers of any of its distinguished sons, while washing its hands of all responsibility for the failures. But it would be simply perverse not to recognize that some college graduates of distinction have belittled the strictly intellectual effects of their college training, and sometimes have spoken with regret of the whole period as one largely wasted. On the other hand, there are many who attribute a large part of their later success in life to the effects of their college experience, sometimes according primary importance to the influence of teachers and books, sometimes giving preference to the general social, moral and physical training supposedly received. Again there are some instances of men who have had very distressing records in life who, rightly or wrongly, hold the college largely responsible for their failures. The truth is that justly to appraise the influence on later life of definite elements, or segments, of youthful experience is often very difficult, but without complete knowledge of all the pertinent facts, it is obviously hazardous to credit the college uncritically with either the success or the failure of any specific graduate.

The most serious of the thoughtful criticisms of college graduates are apt to turn on the alleged intellectual aridity, the formalism and the provincialism of college instruction, its lack of real discipline in thinking, its failure to stimulate intel-

lectual curiosity, initiative and enthusiasm or to give solid mastery over material. Such criticisms are naturally valid in very different degree for different periods and for different institutions. But they reflect a general body of opinion which doubtless has some basis in fact. The old purely memoriter methods of the New England college, with much of its instruction confided to callow and untrained tutors, must have been deadening to an insufferable degree. During the last three quarters of a century, the extraordinary expansion in the subject-matter in which the college is compelled by the logic of events to offer instruction, together with the rapid increase of its students, have presented problems of the most baffling character for which adequate solutions have been only slowly discovered. I think it is fair to say, however, that the college in our day is more alert than ever before to make its curriculum truly stimulating and truly disciplinary to intellectual initiative and the power to think. It may even be charged with having become open-minded to new methods, or at least to the basic rehabilitation of old methods. I do not say that all colleges are guilty under this charge, but it is certainly becoming popular to challenge methods and at least to insist that they be frankly weighed and honestly compared with other and newer forms of procedure. The next generation of graduates may be quite as critical as those who have gone before, but at least I think their plaints will be directed to quite other grievances.

Not the least of the incentives to the college to mend its ways has been the demand of its own more thoughtful students that they be given opportunities more worthy of their mettle. And in passing may I say that the present generation of youth, with all its traits so disturbing to the Victorian complacency of my own, seems to me in general a superb lot and distinctly more promising than its forebears?

Even the most flattering evaluation of the influence of the college on American affairs must recognize that it has affected the various aspects of national life in widely differing degree and that some important divisions of that life have been left practically untouched. It would naturally not be fair to assume that, because a man had not been to college, he had therefore at no point in his career been materially affected in his mentality or his outlook by the existence and influence of the college. He might, or he might not, have been so affected. But, on the other hand, if we find many men of outstanding distinction in sundry important walks of life who have not had a college training, we may at least infer that there are reputable forms of social activity for which such training affords no indispensable discipline. Moreover, such facts bear significantly on the familiar claim that the great obligation of the college is to train leaders. Let us glance very briefly at some of these circumstances.

In political life, not a few of the greatest of our statesmen have been innocent of almost any formal education, to say nothing of that of collegiate grade. Among the Revolutionary heroes, one's thought turns instantly to Washington and Franklin, who in somewhat different fields are each recognized as the greatest men produced in their generation. In the later periods of our national life, the great figure of Abraham Lincoln towers over all others in heroic proportions, and needless to say, his education was solely that which he forged for himself out of the grim and crushing circumstances of his youth. Andrew Jackson, twice president of the United States, the most picturesque figure in the intermediate period between the Revolution and the Civil War, was also a man entirely innocent of collegiate contacts. In our more recent history, few names are more honored than that of Grover Cleveland, and he again was entirely without college experience or

training. The defender of the college may, however, well call attention to the fact that Thomas Jefferson and both the Adamses, Madison and Monroe, to say nothing of many other distinguished men who contributed to the formulation of our Constitution and to the establishment of our government, all had had a measure of collegiate education. In our immediately contemporary history, the outstanding figures are undoubtedly Theodore Roosevelt and Woodrow Wilson, both of whom were distinctly and in many respects typically college products. Indeed, taking our presidential list as a whole, a large proportion of the holders of the office have been either graduates of colleges, or men who have at least spent some time within the walls of these institutions, although since the Civil War two of our presidents were never college students and another, General Grant, was a West Point graduate.

Time does not permit such an excursion, but we should secure a result appreciably less flattering to the college if we scrutinized the membership of Congress. In the federal judiciary, the trend toward collegiate training would appear to be more marked than in Congress, certainly in the later period, for lawyers have had a practical reason for securing a thorough education when possible. The only man in our history who has been both president and chief justice of the Supreme Court is a distinguished college graduate—of Yale as it chances. Nevertheless, it is, I suppose, conceded on all hands that no man has left a deeper impress on the federal Constitution and on the status of the Supreme Court than Mr. Justice Marshall, who never enjoyed collegiate education, unless listening for a few weeks to lectures on law at William and Mary while waiting for a command during the Revolutionary War could be so considered. One must certainly conclude that, so far as concerns our strictly governmental procedure, many of our most eminent figures have owed little or nothing directly to the college. Their careers teach the great lesson we so easily forget, that all real education is in fact self-education, and that the man of force and native ability can always rise superior to the limitations of circumstance.

In industrial and business life, until relatively recent times, a college education was viewed as at best a merely luxurious accessory, and probably a heavy handicap —a view still energetically maintained by some of our commercial and industrial luminaries. Few of the great merchants or the great manufacturers or mine exploiters or transportation pioneers have been men of collegiate training. John D. Rockefeller, Andrew Carnegie, Marshall Field, Henry Ford—to mention only a few from this group—were all self-educated men, so far as concerns anything beyond the school level. The men who have built and organized the great railroad systems, the Vanderbilts and the Hills, have rarely been college men, though in our time the college is appearing with increasing frequency in the management of these roads. Bankers have perhaps more often been of the college type, for banking in the earlier periods was often more or less of a hereditary family calling and the sons were apt to be given what were thought the best advantages of the time. Indeed, in general, it is the case that the sons of the successful pioneers in business have been given collegiate training, although there are striking exceptions to this.

In the field of invention, so closely related to industrial and commercial interests, college men figure much more frequently, but there are still striking examples of the attainment of non-college men. Mr. Edison is in some respects the outstanding example of this in our generation, although the Wright brothers' achievement has doubtless more completely revolutionized the modern outlook on life and

it is still impossible to predict what changes in our civilization may ultimately flow from their mastery of the air. The cotton-gin and the telegraph both came from college-trained men—Yale men as it happens—but the reaper and sundry other mechanical inventions are not direct products of the college group. Physical chemistry be it said, the science on which is largely founded the great chemical industry, derives almost wholly from the work of an obscure Yale scientist, Willard Gibbs, of whom the outside world has little or no knowledge. It is now widely conceded, by the competent, I think, that Gibbs is the most eminent and original scientist America has thus far produced. It is also obviously and conspicuously true that in the electrical industries and all therewith connected, the developments of the non-collegiate inventors are largely based on the fundamental scientific achievements of collegiate, or technical school, graduates.

In literature one may expect to find the college well to the fore, although in creative literature narrowly conceived, the professional critics of the college would perhaps be skeptical. A hasty inspection of the situation leaves one feeling that the case is rather ambiguous. Perhaps the most that one could say would be that, if the college has not stimulated, there is at least little evidence that it has seriously crippled, the creative mpulse in many of its sons. Among our earlier poets, Longfellow, Bryant and Emerson were all college men, but Whittier was not, and, in the somewhat later generation, Whitman was not, although Lowell was. In the field of the novel and the short story, Irving had no college training. Hawthorne spent four years at Bowdoin, but according to his biographers with little tangible effects from the experience. Cooper was for a time at Yale, Poe was also briefly at the University of Virginia. In the later generation, William Dean Howells, Mark Twain and Bret Harte, to pitch on simply a few from the group, were all innocent of college training. Examples of conspicuous contemporary novelists, both inside and outside the college group, will occur at once. I am not able to discern any preponderant literary virtue in the one group as compared with the other. The field of interpretative literature, as well as that of the purely scholarly variety such as history and biography, is in much larger measure in the hands of college-bred men, though here again one meets occasionally striking achievements of non-collegiate writers.

Journalism, that no man's land between literature and commerce, has always had a goodly sprinkling of college men in it; but Horace Greeley, one of the most notable of the early group of distinguished editors, was not a college man. James Gordon Bennett was an Irish Catholic seminarian, and many others who would be thought of as typical representatives owed little or nothing to American college training. The paper to-day most commonly ranked, and correctly I think, as the leading American journal is owned and administered by a non-college man, while the great newspapers that are most generally contemned as exercising a pernicious moral influence on the national life are conducted by college graduates—graduates of our most eminent institutions at that. Even among the highly successful and intrinsically obnoxious tabloids is one conducted by a college graduate.

In the fine arts, so-called, the case is, as might be expected, even less flattering for the college, although this fact does not seem to me to reflect in any way upon the college. One need not pause to enter the debate as to whether or not a college education is, as such, fatal to an artistic career. It is reasonably clear that heretofore at least the college has not particularly attracted the embryonic artist of genius. Indeed, we have not as yet in America

produced many artists of the first rank, and it is hard to discover among them college men who would be universally accredited to the first flight. Whistler and Sargent among the painters, Pennell among the etchers, St. Gaudens among the sculptors, are none of them college-trained men. In music the collegiate harvest is also very meager. Neither in the field of serious composition nor in that of musical rendition have we as yet produced many artists to whom high rank has been authoritatively conceded, and in the group the colleges are very scantily represented. In architecture there are more collegiate men of merit, but not a few of these are really products of technical and professional institutes rather than of the college in any proper sense. In this respect, however, the tide is certainly turning. Still in our generation the names of White, Goodhue and Cram are none of them found in college lists. The stage, like the other fine arts, discloses relatively few distinguished achievements at the hands of college men—at least so far as concerns actors. Some excellent writing for the theater has been done by college graduates, but little of it can perhaps as yet be seriously put in the class of literature likely to endure.

In this hasty and inevitably somewhat superficial survey of the place of the college man in some of the more important walks of life I have been obliged to make many omissions, and among others I have foregone any attempt to weigh strictly military and naval leadership or to deal with engineering, which is recruited chiefly from the technical schools and from men trained on practical jobs. Similarly I have omitted agriculture, to which the college has contributed its due quota of the chronic critics of our climate.

It is only in the ministry and in education that the college has enjoyed anything approaching a monopoly of distinction, and, even here, there are exceptions. In law and in medicine the college has, in recent years, been almost as conspicuous, and as time goes on no doubt there will be few men of eminence in either profession who are not college trained. To be sure, the technical school will continue appreciably to recruit medicine as it now so largely does engineering, but the college will be increasingly the avenue of approach to the so-called learned professions. Whether this will be the four-year college or some modified form of this institution I can not pause to discuss.

One would not labor unduly to prove the axiomatic, and it may therefore without argument be set down as fact that, in the earlier period of our national life, the colleges were the most important, and indeed indispensable, agencies in keeping alive and promoting the ideals of sound learning and the conceptions of higher intellectual culture. In later generations they have shared these functions with other agencies, but they have never surrendered their primacy. Nor can this fact be challenged, unless, in the interests of magnifying the universities, one wishes to attempt the impossible task of distinguishing the colleges wholly from the universities in which so many of the most important are integral parts. I do not find it practicable within the compass of this address to make any sharp distinction between the college which like Illinois or Amherst retains its title and its strictly collegiate organization, from one which like Princeton or Columbia has become a part of a great university. Unquestionably there are significant differences between the two varieties, but their similarities are probably more important than the differences.

Not the least of the achievements of the college is it to have served as the soil out of which has sprung the university. The American university doubtless has its shortcomings, but, in its finest examplars, it is an amazing and superb human achieve-

ment and one deserving unqualified respect and admiration. The American college can, at this point at least, look fearlessly on its own work and see that it is good. Sometimes it has appeared as though the university might grow so rapidly as to strangle the college and leave it behind, a useless prey to the educational jackals which always infest the highroad of progress. But it is now quite clear that nothing of this kind is to occur and that, in our generation at least, the college is more firmly established than ever before and with a more explicitly defined and accepted field of operation. I say this with due knowledge of the junior college movement, with many of whose objectives I am deeply sympathetic, but, as I have just remarked, I can not here discuss the issues which the appearance of this modified form of the college creates.

The small college in particular has once more come into its own. Increasingly it is recognized that certain social and educational values inhere in the life of a small and intimate group which are easily smothered and ultimately lost in the larger institution. Accordingly we find our colleges—for this and for other reasons—limiting their numbers and attempting to subdivide their students into smaller groups, within which some or all of these cherished values may be restored. Illinois College has always been a small college and has thus enjoyed the unquestionable benefits which attach to this condition. It must not be thought that these benefits are unaccompanied by certain disadvantages which the larger and more affluent college may avoid, but the advantages are very real and not to be undervalued.

Without the college, the church, deprived of its educated leadership, would have been in danger of speedy relapse into primitive chaos, with the loss of its most substantial constituency and the obliteration of its interest in things intellectual; whereas, in point of fact, it has, with all its shortcomings, in general been a most active agent in promoting the establishment of both schools and colleges, and its more enlightened branches have heartily supported liberal learning and free scholarly research. Like the college, the church and the ministry are under constant attack. It is not my province to attempt any analysis of the justice of these attacks. Persons who regard the ministry as hopelessly reactionary and out of touch with modern life must blame the college in part. Those who consider the ministry to be, on the average, well-informed, intellectually honest and essentially vigorous may give the college a good deal of the credit, for all the stronger seminaries require college education for entrance, and the most thoroughly trained ministers thus bring to their work whatever merits, or demerits, the contemporary college training conveys.

The college, together with the university, has largely created the market for the serious publications of the press, including the scientific and scholarly journals of all kinds. It has naturally furnished practically all the great leaders in higher education and scholarship and its influence, not always perhaps beneficial, has reached down through the whole fabric of secondary education into the primary school. In the last two or three decades, to be sure, public secondary schools have become highly self-conscious and, to a certain extent, have shaken themselves loose from what they had come to regard as the oppressive domination of the college. But even so, the rank and file of their directing personnel are increasingly men and women trained in the colleges or in technical and professional schools of collegiate character. The steady pressure for higher standards of training has inevitably resulted in this outcome. Moreover, the public-school system, as a system, with the

pre-school kindergarten at one end, and the state university, with its college of liberal arts, its graduate and professional schools, at the other, is, in its origin, largely the work of college-trained men. Nor should one be misled by the fallacies of public estimates regarding the solid achievements of American scholarship. In the sciences in particular we have developed men of the first importance. Certain branches of astronomy, for example, are almost exclusively American property. And in the humanities also the tide is running strongly our way. Our accomplishments are rapidly gaining European recognition and prestige, a recognition which, except for Franklin and his accomplishments, has rarely been generously given. Altogether it is a chapter in our history of which we may justly be proud, although the recruitment for scholarship of a fair share of the ablest young men in the rising generation presents a difficult and crucially important problem.

More subtle and less tangible, but perhaps most important of all, has been the influence, pervading every field of honorable endeavor, of the steady current of choice youth flowing back from the colleges into the main stream of our national life, carrying with them something of that elevating and enriching sense of contact with the universe of ideas, something of that liberalizing and civilizing knowledge of great persons and great events, which even the feeblest college gives to its graduates in some measure. How far these influences have operated to refine taste and advance intelligence it is difficult to say, especially in the face of the humanly unprecedented changes which have come over our national life, in part as a result of the mechanizing of our civilization, in part as the outcome of our effort to assimilate millions upon millions of alien folk, many of them unfamiliar with our tongue, not a few intrinsically very ignorant, and all of them strangers to our ways. But whatever achievement is to be here remarked—and it seems to me altogether extraordinary—the colleges may justly claim the lion's share of the credit. That they have been less potent in the fine arts than in science, in education and in the creating of an intelligent fundamental outlook on political and moral life, may, I think, be granted as obvious. They have certainly enhanced enormously the enjoyment and appreciation of the intellectual, esthetic and moral values in life and have contributed in rich measure to the finer and more enduring satisfaction of the spirit. To these gifts thousands upon thousands of their grateful graduates will testify.

In this noble company of American colleges the high place of Illinois College, as it confidently enters on its second century of service, is forever secure.

EDWARD FRANKLIN BUCHNER

THE following resolutions have been adopted by the Educational Society of Baltimore:

Edward Franklin Buchner was born at Paxton, Ford County, Illinois, September 3, 1868. He received the A.B. degree from Leander-Clark College, Toledo, Iowa, in 1889, was a post-graduate student from 1890 to 1893 and received the degree of doctor of philosophy from Yale University in 1893. He was an instructor in Leander-Clark College from 1889 to 1890; lecturer, from 1892 to 1894; instructor in philosophy and pedagogy, from 1894 to 1897 at Yale; professor of psychology, New York University, from 1896 to 1901; docent in philosophy, Clark University, from 1901 to 1903; professor of philosophy and education, University of Alabama, from 1903 to 1908. In 1908 he was called to Baltimore to take the chair of education and philosophy at the Johns Hopkins University. In 1909 he became director of the college courses for teachers, which had just been established. In 1911 summer courses for teachers were established,

and from this date on, there was constant expansion in the courses provided at the Johns Hopkins for teachers. In 1915 the work had grown to such an extent that the board of trustees authorized the establishment of the department of education, and provided for the awarding of the B.S. degree. In 1924 the College for Teachers was established. The present year saw the culmination of Dr. Buchner's efforts when the board of trustees of the university established the School of Higher Studies in Education and authorized the awarding of two new degrees to graduate students in the department of education, namely, the degrees of master of education and doctor of education.

During the years when he was at the Johns Hopkins, Dr. Buchner was connected with some of the most important educational societies in this country and was the president of several of them, notably, the National Society of College Teachers of Education, the Southern Society for Philosophy and Psychology and the National Institution for Moral Instruction. He was also a former president of the Maryland State Teachers Association. In 1909 he became president of the Educational Society of Baltimore, and was reelected year after year, holding the office for eleven terms. In 1927 he was awarded the LL.D. degree by the University of Alabama.

WHEREAS, therefore, Dr. Buchner has been so intimately connected with the educational life of Baltimore, of Maryland and of the United States for the past thirty-six years; and

WHEREAS, he was an active member and regular attendant at the meetings of the Educational Society, as well as a highly esteemed counselor and friend in all its activities during the past twenty years; and

WHEREAS, through his work at the Johns Hopkins University in promoting the interests of education in Baltimore and Maryland for the past twenty years, has influenced the educational life of these communities as no other individual has; now, therefore, be it

Resolved, that the Educational Society, in regular meeting assembled, desires to place on record its appreciation of his great services to education in general, and to the well-being of the pupils and teachers of the schools of this city and state in particular. In many of the schoolrooms of these communities, as well as in supervisory, administrative and executive positions, are to be found men and women who received much, in some cases, all, of their professional training under his wise and kind guidance. Until Dr. Buchner came to Baltimore, there were very few opportunities afforded in this city to teachers in the service to increase their professional training. No one has done as much as Dr. Buchner to demonstrate to this community the value of trained teachers and to teach the community that increased expenditures for its schools are wise outlays. Be it further

Resolved, that in the death of Dr. Buchner, the Educational Society has lost its most distinguished member. During the twenty years of his connection with the society, he has never allowed the society to lose sight of its original objective, namely, to hold high in the community the torch of educational progress. He was such a regular attendant at its meetings, even after he surrendered the presidency, that his absence from a meeting was noted on all sides. Many of the members of the society are among those who were enabled to continue their professional studies through Dr. Buchner's epochal work in the College for Teachers at the Johns Hopkins University. These men and women can bear personal testimony to the warm friendship displayed by Dr. Buchner in connection with their professional studies and to his unfailing encouragement; and be it further

Resolved, that copies of these Resolutions be spread upon the minutes of the society, given to the press and sent to the family of Dr. Buchner.

DAVID E. WEGLEIN, *Chairman*
CLARENCE G. COOPER
FLORENCE E. BAMBERGER
WILLIAM R. FLOWERS

EDUCATIONAL EVENTS

OPEN-AIR MUSEUMS

THE recently published report of the British Royal Commission on National Museums and Galleries recommends that "folk museums" should be instituted, to illustrate the domestic life of the nation in the past. These should be open-air museums, and eventually there should be separate museums for England, Scotland, Wales and Ireland. The grounds around Chiswick House or the Botanic Gardens in Regent's Park are mentioned as suitable sites for the first open-air "English Museum."

The *Times Educational Supplement* notes that such museums have already been established and are a popular feature in Norway, Sweden, Denmark and Finland. The first was

founded in 1891 at Skansen, Stockholm, and this world-famed open-air museum in an extensive and beautiful natural park is a very popular pleasure ground, appreciated by foreigners and Stockholmers alike. It is an extension of the near-by Northern Museum, which was built primarily in order to house a collection of handicrafts and peasant art, but which now contains also a most varied and complete collection of objects illustrating the progress of civilization in the country. The grounds of Skansen afford a display of ancient arts, building crafts and customs, together with the typical animal and plant life of the country, so that a visitor can in the space of a few hours at Skansen learn a good deal concerning the country and its resources, and Swedish peasant life and culture through the centuries.

At Lyngby, in Denmark, there is an open-air section of the Danish Folk Museum, with ancient farm-buildings and peasant homes, typical of those to be found in various parts of the country in long-past days. The evidences of peasant art and handicraft in the interior decoration and furnishing of these homes are not the least interesting features of this Folk Museum.

At Oslo is the Norsk Folkemuseum, one of the most interesting sights of the Norwegian capital. The museum contains a number of ancient houses, completely furnished, from the various country districts, giving a vivid impression of the daily life of the peasants in olden times. There is also an old wooden church dating from the thirteenth century, in which a peculiar method of timber construction is used.

In Finland there is a National Museum at Helsingfors, which contains a representative collection illustrating the progress of civilization in Finland, and also an important ethnographical department. The collection of agricultural, fishing and hunting implements and household utensils is of exceptional interest. A visitor coming to the country for the first time needs help in picturing the life of a people who until recently had but little communication with the outside world, and had learned to make with their own hands from materials in their forests practically everything needed for everyday use.

GROWTH IN NUMBER OF TEACHER-TRAINING INSTITUTIONS

GROWTH in the number of teachers' colleges has been an outstanding tendency during the past decade, according to the Office of Education. Since 1919–20 the number of teachers' colleges increased from 47 to 137. In 1927–28, thirty-six institutions, distributed over 15 states, were added to the list of teachers' colleges. Most of these four-year institutions were developed from two- and three-year normal schools by the addition of a year or two of work.

Growth in the number of schools, colleges and equivalent major divisions of education in the universities and colleges has also been noteworthy. More than three fourths of the state universities now have schools or colleges of education; approximately half of these have been organized within the past ten years. In addition to the institutions having these major professional teacher-training units, by far the larger number of more than 900 other colleges, junior colleges and universities in this country have departments, curricula or courses in professional education, and thus contribute to the training of teachers, supervisors and administrators for American schools.

Many of the small liberal arts colleges and junior colleges, having discovered that as many as half or more of their graduates enter teaching, are setting up undergraduate training programs to meet state certification requirements. A considerable number of the state universities and land-grant colleges and many of the large private higher institutions of learning have well-developed graduate departments, schools or colleges of education; and it is in such institutions that a large number of the educational leaders receive their advanced training.

A few states, such as Michigan and Wisconsin, have county normal schools, and in about half of the states of the union teacher-training courses or departments have been authorized in high schools. Several states with excellent standard normal schools or teachers' colleges maintain such training units.

Practically all the teachers' colleges and the majority of the normal schools offer work during summer sessions, thus meeting a large demand for professional training in service. It is

estimated that at least one teacher in four attends such sessions.

THE NEW YORK CITY BOARD OF CHILD WELFARE

DUE to the demands of a constantly increasing number of widows and orphans, the annual appropriation of the Board of Child Welfare has been increased by as much as $1,000,000 since 1926 and enlarged facilities for charitable dispensation have been developed, according to a report made public at the offices of the board and summarized in the New York *Sun*.

The report states that 3,654 more widows and orphans were taken care of by the city through the Board of Child Welfare in 1928 than in 1927 and that the prospects for the present year indicated that there will be at least that many more again. In the neighborhood of nearly $6,241,000 were expended last year in fulfilling the city's obligations to the needy.

The average cost of maintaining a child in an orphan asylum, according to the board's report, is about $30 a month, whereas under the program of home maintenance as sponsored by the Child Welfare Bureau the cost per child is $17 a month. The average allowance made to each family on the board's books comes to $45 a month. Approximately thirty thousand dependents are listed. But for the existence of the Widow's Pension law the majority of these would be cared for in institutions at double the cost the city now pays to maintain them.

"An outstanding feature of the program of home maintenance," the report states, "is that the children are not only kept together in their homes with their mothers but are given virtually the same opportunities as more well-to-do children, and they are under the constant eye of the board. All trace of institutionalism so common in asylums and homes is missing, and families grow up until they become self-supporting without the stigma of charity.

"In 1926," the report continues, "when the Walker administration came into power, the number of families being aided by the Board of Child Welfare totaled 11,272, and the minor children 29,983. The appropriation for that year was $5,350,000, of which $5,173,670.70 went direct to the widows and their children. In 1927 the appropriation was $5,415,000, and the number of families aided was 12,491, and children 33,347. In that year the dependents received $5,411,869.11. Last year the appropriation was $6,241,806, the families numbered 13,805, and the children 37,213. They received $6,229,481.55. Therefore in the last three years 96 cents of every dollar appropriated went to the children and the widows, the cost of the administration being slightly over 3 per cent."

FINANCIAL PLIGHT OF THE GEORGIA SCHOOLS

ACCORDING to a statement in the *United States Daily*, county school systems all over Georgia are facing a crisis that will compel them to close their schools unless the state of Georgia can provide operating funds immediately, according to the state school superintendent, M. L. Duggan, following a conference of state officials on October 29 to canvass the financial situation of the educational system. The state owes the school department approximately $3,500,000, the superintendent said.

As an evidence of the crisis confronting the schools, the Board of Education of De Kalb County, one of the wealthier counties of the state, voted October 28 to close all the De Kalb County schools on November 4 unless the state arranged to provide $28,000 which it owes to the county system. Notice of the action of the De Kalb County Board was transmitted to the state department of education by W. M. Rainey, superintendent of the county system.

Superintendent Duggan announced that at the conference of state officials on October 29 Governor L. G. Hardman stated that he was doing his best to borrow money to meet the emergency. The governor has unexhausted borrowing power of $800,000 for 1929 and will try to raise that much money for the schools.

The total indebtedness of the state to the school department is $1,549,000 balance on the 1928 appropriation, and 40 per cent. of the $5,000,000 appropriation for 1929, or $3,549,000 all told, according to Superintendent Duggan. The school department drew a requisition on the state treasury on October 1 for $666,000 and this requisition has not yet been honored.

On November 1 a similar amount became payable. These amounts represent 15 per cent. of the 1929 appropriation.

Governor Hardman pointed out at the conference that the schools are not deriving any benefit from the collection of 1928 taxes because of an agreement between state fiscal authorities and the Atlanta Clearing House Association that all 1928 tax collections shall be applied to reduce a balance still due on school warrants discounted last year. This balance amounts to approximately $400,000 due Atlanta banks on the 1928 loan.

The state also borrowed $3,000,000 which was used to pay 60 per cent. of the 1929 school appropriation in anticipation of 1929 taxes, so that the total indebtedness of the state to the schools and to the banks is little short of $7,000,000.

SOLARIUM AT CORNELL UNIVERSITY

DR. DEAN F. SMILEY, medical adviser of Cornell University, reports that an ultra-violet ray solarium has been installed on the top floor of the Old Armory, and that irradiations are available to all men students. This is the first ultra-violet ray solarium to be established in an American university, and marks the beginning of a comprehensive effort to make available artificially the helpful effects of the rays of the sun to students at Cornell University. As a result of experiments performed over a long period of years, Dr. Smiley, together with Dr. George H. Maughan, of the department of physiology, has shown that common colds can be prevented to a considerable degree by the use of ultra-violet rays. In one series of observations made among four groups of persons at the university, there resulted a reduction in the frequency of colds of from 27.9 per cent. to 40.3 per cent. The solarium will be in charge of Dr. Maughan and will be open for men on Tuesday, Thursday and Friday afternoons, from 2 to 6 P. M. Arrangements for women will be made later. It will continue in operation until May, and a nominal fee of $4 will be charged for the six months' period.

Two types of ultra-violet rays will be available. One section will consist of 16 fifty-inch mercury tubes with aluminum reflectors. They are arranged in perpendicular positions around the room. A student taking the rays proceeds between two rows of tubes, standing in front of each position for one minute. A clock rings automatically, giving the signal for the student to advance to the next position. In addition to the vertical tubes, there are two overhead tubes which make it possible for the entire body to receive the ultra-violet rays. The intensity of the artificial rays is stronger than sunshine at noon on the brightest day. Another section of the solarium contains five carbon arc lamps, and the same system prevails for advancing the patient from one station to another. The lamps have hollow carbons which contain various metals, particularly aluminum, iron and nickel. These when heated to white heat give off a high amount of ultra-violet as well as some of the visible spectrum and infra-red rays, the latter being considered important for their therapeutic value in such diseases as rheumatism and tuberculosis. Overdoses of the rays are guarded against by the presence of Dr. Maughan. Dark goggles are furnished to each student taking the treatment in order to prevent eye injury. The doses administered will be short of sunburn.

THE ALUMNI DIRECTORY OF YALE UNIVERSITY

STATISTICS from the new Alumni Directory of Yale University show that there are 35,825 living Yale men. Of these, 9,889 are non-graduates, leaving a total of 25,936 living graduates. There is a net increase since 1926, when the last directory was published, of 3,109 names in the combined lists.

The two oldest living graduates, the directory shows, are members of the class of 1853 of Yale College. They are Edward P. Bradstreet, of Cincinnati, who was born in 1830, and George W. Baldwin, of Vevey, Switzerland, who was born in 1832.

The distribution of Yale alumni geographically shows them to be widely scattered over the United States and the world. Six states—Massachusetts, New Jersey, Pennsylvania, Ohio, Illinois and California—each have over 1,000, and every state in the union is represented. New York leads with 8,671, and Connecticut is second with 7,659. In addition to the United States, there are Yale alumni living in 475 different foreign towns. In the United States and her possessions, they live in 3,785 cities and towns. A total of 5,669 live in the metropolitan area. New Haven has 2,802; Chicago,

1,024; Boston, 410; Bridgeport, 489; Cleveland, 509; Hartford, 749; Philadelphia, 446; Pittsburgh, 406; Washington, 483, and Waterbury, 349.

The practice of law has attracted 4,422 graduates. Education engages 2,949. Figures for other occupations include industrial and commercial enterprises, 5,478; medicine, 1,854; ministry, 1,329; engineering, 1,934, and banking, 2,637. More non-graduates are engaged in business than in professional work.

Yale College leads the list in numbers of living graduates with a total of 12,152; the Sheffield Scientific School has 7,423. Living graduates of the graduate and professional schools are as follows:

The graduate school, 3,157; school of the fine arts, 233; school of music, 127; school of forestry, 566; school of medicine, 865; school of law, 2,831; the divinity school, 1,348, and the school of nursing, 41. There are 503 individuals who hold honorary degrees from Yale.

The directory, edited by Miss Lottie G. Bishop, executive secretary, University Secretary's Office, contains the addresses of 35,463 of the 35,825 appearing therein. Only seventy-one graduates are without addresses. This is forty-one less than in 1926, although the lists are longer by 2,184 individuals. In the non-graduate lists the number of "lost" has dropped from 364 to 291. The work of the alumni registrar, Miss Marion L. Phillips, and her staff, is responsible for the completeness of these records.

NEW PROFESSORSHIPS AT COLUMBIA UNIVERSITY

TWELVE scholars who contributed to the building of Columbia University were honored in the naming of professorships for them by the trustees on November 4 as a part of the observance of the one hundred and seventy-fifth anniversary of the founding of King's College. The new Moore Professorship of Philosophy, which was awarded to John J. Coss, commemorates two former presidents of the university. They were Benjamin Moore of the class of 1768, professor of rhetoric and logic from 1784–1787 and fifth president from 1801–1811, and Nathaniel F. Moore, professor of Greek and Latin from 1817–1835 and eighth president, 1842–1849.

The other new professorships are:

The Hosack Professorship in the faculty of medicine, in memory of David Hosack, professor of botany, 1795–1811, and professor of materia medica, 1796–1811—to be held by Dr. Charles C. Lieb, of the department of pharmacology.

The Da Ponte Professorship of Italian, commemorating Lorenza Da Ponte, professor of Italian, 1826–1837—Dino Biogongiari, of the department of Romance languages.

The Stevens Professorship of Mechanical Engineering, in memory of John Stevens, of the class of 1768, who pioneered in engineering research—Charles E. Lucke, of the department of mechanical engineering.

The Renwick Professorship of Civil Engineering, named for James Renwick, of the class of 1807—James Kip Finch, of the department of civil engineering.

The Burgess Professorship in the faculty of political science, in honor of John W. Burgess, professor emeritus, who was professor of political science and constitutional law, 1890–1912—Lindsay Rogers, of the department of public law and jurisprudence as Burgess Professor of Political Law.

The MacDowell Professorship of Music, commemorating Edward A. MacDowell, professor of music, 1896–1904—Daniel Gregory Mason, of the department of music.

The Brander Matthews Professorship of Dramatic Literature, in memory of the late professor emeritus, who died last March after having been professor of literature from 1892 to 1900 and professor of dramatic literature, 1900–1924—George C. D. Odell, of the department of English and comparative literature.

The Vinton Professorship of Mining Engineering, in memory of Francis E. Vinton, professor of civil engineering from 1864 to 1877 and a builder of the original school of mines—Thomas Thornton Read, of the department of mining.

The Newberry Professorship of Geology, in memory of John S. Newberry, professor of geology and paleontology, 1866–1892—Charles P. Berkey, of the department of geology and mineralogy.

The Ware Professorship of Architecture, in memory of William Robert Ware, professor of architecture from 1881 to 1903 and emeritus professor, 1903–1915—William A. Boring, director of the school of architecture.

EDUCATIONAL NOTES AND NEWS

JOHN VAN ANTWERP MACMURRAY, the American minister to China, has resigned from the foreign service "to accept a responsible position at the Johns Hopkins University."

DR. GEORGE A. WORKS was formally installed as president of the Connecticut Agricultural College at Storrs on November 7. The principal speakers were: The Honorable John H. Trumbull, governor of Connecticut; Dr. Samuel P. Capen, chancellor of the University of Buffalo; President James L. McConaughy, of Wesleyan University, and Harry G. Manchester, chairman of the Connecticut College trustees.

THE REVEREND DR. ALBERT W. BEAVEN was installed as president of the Colgate-Rochester Divinity School on November 8. He follows the Reverend Dr. Clarence A. Barbour, who was recently inducted as president of Brown University.

DEAN DEXTER S. KIMBALL, of the College of Engineering of Cornell University, has been appointed acting president of Cornell University during the leave of absence of Dr. Livingston Farrand, who is spending November and December in Italy.

A DINNER by the Chicago Bar Association was given on October 31 to Professor Leon Green, recently elected dean of the school of law of Northwestern University, and to the dean emeritus, Dr. John H. Wigmore, who retired at the close of the last academic year after having served for nearly thirty years.

THE honorary doctorate of the University of Paris was conferred on Professor Albert Einstein on November 9.

DR. PAUL MOLDENHAUER, professor of insurance at the University of Cologne, has become minister of economics in the coalition government of Germany. He succeeds Dr. Julius Curtius, who has become minister of foreign affairs.

WINSTON CHURCHILL, formerly British chancellor of the exchequer, has been elected lord rector of the University of Edinburgh. He received 864 votes. G. K. Chesterton, the author, received 593 and Mrs. Sidney Webb, wife of Lord Passfield, 332. The lord rector of the university is elected every three years by the students. The retiring lord rector is Sir John Gilmour.

THE senate of the University of London, with the concurrence of the court, has appointed Dr. Edwin Deller, previously academic registrar in the university, to the post of principal as from October 1, 1929, in succession to Dr. T. Franklin Sibly, now vice-chancellor of the University of Reading.

DR. ADHEMAR GEHAIN, who for three years has served as director-general of instruction of Bolivia, retired on November 1.

OWING to the resignation of Professor Joseph Warren from the position of acting dean at Harvard Law School, his place is temporarily being taken by J. H. Beale, Royall professor of law. The position of acting vice-dean is being taken by E. M. Morgan, professor of law. Dean Roscoe Pound, whose place Professor Beale is filling, is at present in Washington in connection with the National Law Enforcement Commission.

DR. VERNON KELLOGG, permanent secretary of the National Research Council, has been elected acting director of Science Service pending consideration of the appointment of a successor to the late Dr. E. E. Slosson.

DR. H. W. TYLER, secretary of the American Association of University Professors, having returned to the Massachusetts Institute of Technology on the expiration of his leave of absence, the management of the Washington office has been assumed by the treasurer, Professor Joseph Mayer, who has been granted leave of absence by Tufts College for this purpose.

DR. ROBERT WHITNEY BOLWELL, professor of American literature at the George Washington University, has been appointed director of the 1930 summer session.

WILLIAM R. WESTHAFER has been appointed dean of Wooster College, Wooster, Ohio. From 1909 to 1918 he taught physics at Amherst College and since has been on the faculty of the department of physics at Wooster.

DR. AMOS N. MERRILL, professor of secondary education in Brigham Young University, has been elected president of the Utah Education

Association for the ensuing year, and Mr. Philo T. Farnsworth, grammar-grade supervisor of the Granite School District, has been elected first vice-president.

CHARLES B. MCLINN, who two years ago was dismissed after twenty-two years' service from the principalship of the high school at New Albany, Indiana, because he differed from the board on educational policies, has been elected mayor of the city. At the time of his dismissal 700 students went out on strike, but were persuaded to return by Mr. McLinn.

JOHN F. BROUGHER, supervising principal of Clarks Summit Schools, has been appointed state supervisor of secondary education of Pennsylvania.

SUPERINTENDENT J. L. GRAHAM has joined the staff of the Georgia State Department of Education, where he will have charge of the state school-building program.

HARRY D. TEAL, of Canton, Ohio, has been elected superintendent of Clairton Schools, Pennsylvania, to complete the unexpired term of F. N. Frits, who resigned last January. Mr. Teal was elected to serve until July 1, 1930, at a salary of $7,000 a year.

F. HERMAN FRITZ, superintendent of Ashley Schools since 1925, has been elected superintendent of the schools of Pottstown, Pennsylvania, at a salary of $5,000 a year.

MISS CONSTANCE WARREN, principal of Pine Manor, Wellesley, Massachusetts, has been elected president of the Sarah Lawrence College at Bronxville, New York, to succeed Mrs. Marion Coats Graves.

DR. CLYDE J. TIDWELL and Dr. Donald P. Cottrell have been appointed assistant professors of education at Teachers College, Columbia University.

LEON D. SLATER, of the Erie branch of the University of Pennsylvania, has been appointed associate professor of psychology at Ohio Wesleyan University.

MRS. HAZEL SIMMONS MORRISON, of the outpatient department of the Springfield Hospital, has been appointed general secretary of the Boston Children's Friend Society. In February Mrs. Morrison joined the organization as assistant general secretary to make a survey of health problems as presented through the records.

DR. ARTHUR H. HIRSCH, professor of American history and head of the department of history at Ohio Wesleyan University, has accepted a visiting professorship at the University of Michigan for the coming school year.

DURING the past five months, Mr. Lawrence Duggan, who is in charge of the recently created Latin American division of the Institute of International Education, has been making a tour of Latin America in order to study its cultural and educational relations with the United States, and to ascertain how they might be extended. Mr. Duggan visited Panama, Ecuador, Peru, Bolivia, Chile, Argentina, Uruguay and Brazil, conferring with educational officials and university authorities. As a result, he has made many arrangements and plans in the direction of student and teacher interchange. It is hoped the realization of these plans will meet with the same success that has attended the European work of the institute.

THE China Foundation for the Promotion of Education and Culture has invited Professor H. H. Whetzel, of the department of plant pathology at Cornell University, to spend a year or more in China. He will be expected to lecture in the various agricultural institutions of China and to assist in the organization and development of phytopathological work in the republic.

THE first lecturer on the Jerome Foundation is Professor John G. Winter, of the classical department of the University of Michigan, who is absent from the university on a year's leave. He will deliver a series of six lectures before the American Academy in Rome.

THE Elizabeth Cleveland Intermediate School in Detroit was dedicated on September 27, with Professor Helen T. Woolley as the principal speaker. A memorial library in honor of Miss Cleveland has been placed in the school.

A MEMORIAL tablet to the late Edward W. Stitt, associate superintendent of the New York City schools, will be placed in the Edward W. Stitt Junior High School.

WE learn from the *Pennsylvania School Journal* that the J. George Becht School in

Loyalsock Township, near Williamsport, is the second school building in the state to be named after the former state superintendent of public instruction who died in 1925. The girls' dormitory building at the State Teachers College, Clarion, built by Dr. Becht while he was principal of that institution, was named J. George Becht Hall shortly before his death. The Loyalsock Township School marks the spot where the original building stood when Dr. Becht entered his profession and taught his first classes there at the age of fifteen in 1880.

DR. JOHN CLAYTON FANT, president of the Mississippi State College for Women since 1920, died on November 11, at the age of fifty-nine years.

DR. FRANKLIN L. RILEY, professor and head of the department of history at Washington and Lee University for fifteen years, died on November 11. He was sixty-one years old.

PROFESSOR THOMAS FREDERICK TOUT, professor of history at the University of Manchester, England, from 1890 to 1925 and Messenger lecturer at Cornell in 1928, died on October 23.

A GROUP of educators took part in broadcasts over WABC's network on November 13 and 15, in observance of American Education Week. Among the speakers listed were Dr. John Dewey, of Columbia University; Dr. John W. Withers, dean of the college of education of New York University; Mabel Carney, professor of rural education at Teachers College, Columbia University; Professor Howard R. Driggs, of New York University; Dr. E. L. Thorndike, of Teachers College, and Senator Simeon D. Fess, of Ohio, who spoke regarding the nation's viewpoint in education.

STEPHEN P. CABOT, formerly headmaster of St. George's School, Newport, Rhode Island, now chancellor of the Avon Old Farms School, Avon, Connecticut, will give, during November and December, under the auspices of the Graduate School of Education, four lectures on European Schools. The dates and titles of the lectures, which are being given on Thursday evenings at 8 o'clock, are: November 14—The Reform Movement in Germany; November 21—French Schools; December 5—English Schools, Old and New; December 12—The Folk High Schools of Denmark and the Elsinore Conference. These meetings are open to the public.

PROFESSOR HARLOW SHAPLEY, director of the Harvard College Observatory, will deliver a series of five lectures at the College of the City of New York, on successive Wednesdays, beginning on November 20. The dates and titles of the lectures are: November 20—"On the Kinds of Things"; November 27—"The Microcosmos"; December 4—"Concerning Planets"; December 11—"To the Bounds of the Galaxy and Beyond"; December 18—"The Cosmoplasma."

THE New York State Association of Deans held its third annual meeting on November 15 and 16 in Troy, N. Y., as guests of Russell Sage College. The main topics for discussion were the interdependence of collegiate and secondary school administration and the professional status of deans of boys and deans of girls in New York state high schools. The speakers included Dr. George M. Wylie, assistant state commissioner of education, Dr. J. L. Meader, president of Russell Sage College, Dr. Charles C. Tillinghast, principal of the Horace Mann High School for Boys, New York City, and Dr. Herbert Hawkes, dean of Columbia College.

AT a three-day session of the Association of American Medical Colleges, which opened at the Medical Center of Columbia University on November 7, President A. Lawrence Lowell spoke on "Resident Colleges at Harvard University" at a joint session with the Association of American Universities. Dinner addresses were made by President Nicholas Murray Butler, of Columbia University, and Dr. Burton D. Myers, president of the association. Among speakers at the other sessions were Dr. Guy Stanford Ford, dean of the graduate school of the University of Minnesota, and Dr. J. C. Metcalf, dean of the graduate schools of the University of Virginia.

THE annual meeting of the American Association of University Professors will be held with that of the American Historical Association at Duke University and the University of North Carolina on December 28 and 30, under the presidency of Professor Henry Crew, of Northwestern University. The program is ex-

pected to include, in addition to the usual business, special reports and discussions on required courses in education, college athletics, public utilities propaganda, the new appointment service for college teachers, etc. Addresses are also expected on the work of the American Bar Association and the American Medical Society as related to the program of the association.

CELEBRATION of the seventy-fifth anniversary of the legislative grant of a charter to the institution that is now the Pennsylvania State College will be observed next year by the college. Trustees of the college have approved the suggestion of President Ralph D. Hetzel to mark the anniversary celebration with suitable educational conferences during which dedication of buildings now under construction will take place. Each of the six schools of the college will have a new building completed by the time college opens in late September of 1930. The anniversary of founding will be celebrated over a period of at least three days in October or November, and in this period each school will conduct meetings that will attract educational, agricultural and industrial leaders from the state and nation. Penn State received its institutional charter through an act of the state legislature on February 22, 1855. Four years later the first students entered what was then known as the "Farmers' High School of Pennsylvania."

BETWEEN October 17 and 29 the trustees and friends of the University of Buffalo conducted a campaign in Buffalo and the vicinity to provide an addition of $5,000,000 to the capital funds of the institution. The sum of $5,331,670 was raised within the twelve-day period. There were 30,478 subscribers. Several very large gifts were included in the total. The Schoelkopf family contributed $1,000,000 for a foundation, the income of which is to be used for general university purposes. Mr. J. F. Schoelkopf, Sr., subscribed $500,000 to be held in trust for a period of years, the income then to be used for the promotion of research. Mr. Thomas B. Lockwood contributed $500,000 to build a library. Mr. William H. Crosby and family contributed $200,000 for the erection of a building to house the School of Business Administration. Mrs. Joseph T. Jones provided $125,000 for the endowment of a professorship of French. Mrs. Seymour H. Knox and family contributed $150,000, Mr. and Mrs. Walter P. Cocke $100,000 and Mr. and Mrs. LeGrand S. DeGraff $100,000. The campaign coincided with the recent disastrous break in the stock market. In spite of this serious handicap the campaign committee succeeded in passing the goal it had set for itself.

GIFTS to Columbia University include $200,000 from Mrs. Charlotte E. De Sers, for the endowment of a professorship in memory of her father, Robert Johnson Niven, formerly a student of Columbia. The sum of $100,000 has been bequeathed by the late Charles H. Ditson to the department of music and $100,000 by Frederick Bertuch to establish a fund for needy students. Colonel William Boyce Thompson, of Yonkers, formerly a student of the school of mines, gave $100,000 to the school of engineering. $70,000 from the Rockefeller Foundation has been received for research.

LAYING of the corner-stone for the new Chicago Lying-in Hospital and the adjoining septic pavilion on the University of Chicago campus took place on November 5. Addresses were given by President Robert M. Hutchins, of the university, and by Mrs. Kellogg Fairbank, president of the hospital board. Dr. Joseph B. De Lee, chairman of the newly created department of obstetrics and gynecology and medical director of the hospital, laid the stone. Affiliation between the hospital and the university, by which the university's teaching and research in obstetrics will go forward in the hospital, was arranged last year. A sum of $1,800,000 is available to defray the building expenses. It is expected that the structure will be complete by January, 1931.

COOPERATING with the Outagamie County Medical Association, Outagamie County, Wisconsin, the County Board of Supervisors appropriated $2,000 at its August meeting to provide for the free medical examination of all school children in the county. The examination will be made by the members of the County Medical Association beginning with the opening of schools in September. There are about 5,800 pupils enrolled in the public and private schools in the county. A second examination will be

made at the end of the school year. The County Medical Association will arrange for a number of free clinics during the year, and lecturers of note will discuss important public-health questions.

HENRY L. JOHNSON, of the Graphic Arts Company, Boston, Massachusetts, has been appointed curator of graphic arts in the Museum of Science and Industry, founded by Mr. Julius Rosenwald, of Chicago. Mr. Johnson will prepare exhibits which will trace the history of printing and the graphic arts in general from their primitive beginnings to the present time. Mr. Helmuth Bay has been appointed head of the division of forestry and lumbering. In cooperation with Dr. Russell H. Anderson, curator of agriculture, Mr. Bay is planning the exhibits to demonstrate the nature of industrial woods, as well as their application in industry, and the methods of lumbering and wood-working machinery. Mr. Ernest Kohler, a graduate engineer of the Massachusetts Institute of Technology, has been selected to assist Dr. Andrew M. MacMahon, curator of physics in the capacity of communication engineer. The museum will present the history of communication by means of three-dimensional working models, motion pictures, dioramas, etc., and will include in the exhibits practically every means of communication that has been devised by man.

PIERRE S. DU PONT, of Wilmington, Delaware, and Longwood, Pennsylvania, has offered to donate a third of the cost of building a community school at Kennett Square, Pennsylvania, to cost $750,000 and a similar school at Chadd's Ford, a smaller community, at an estimated cost of $250,000, if the taxpayers of the two communities raise two thirds of the cost of construction. These schools would close several country district schools and concentrate the teaching in the districts at those points. Motorbuses would collect pupils daily from a large area of farm homes and return them at night. Mr. du Pont has about accomplished the task of rebuilding or replacing all the old public-school buildings in Delaware with modern structures and equipping them with up-to-date appliances. The Negro schools, long neglected, have all been replaced by modern, light, cheerful buildings. It is estimated that Mr. du Pont's contributions to public schools amount in all to $10,000,000.

DISCUSSION

ACADEMIC LIBERTY IN DENOMINATIONAL COLLEGES

PRESIDENT SOPER'S treatment of "Academic Freedom in a Christian College" in SCHOOL AND SOCIETY, October 19, faces with frankness and with liberality of spirit a question so difficult that any newly elected head of a denominational college might easily be tempted to maintain discreet silence. His remarks are noteworthy because of the advance that they make beyond practices that are common among the institutions that he has in mind. Though he takes the ground that appointments to positions in the faculty of a Christian college may properly be restricted to genuine Christians and that ceasing to be a genuine Christian and promoter of Christianity is sufficient ground for dismissal, he insists that this condition of employment should be made entirely explicit before any contract is entered into. Such a provision against ambiguity in the terms of employment would coincide with one of the principles that the American Association of University Professors has long upheld. To enforce limitations that are not explicitly stated and agreed upon, nor yet clearly deducible from the situation, is unethical. Still worse, if possible, is the formulation of principles *ad hoc* to fit administrative convenience after friction has arisen.

The condition of employment that President Soper has in mind is not acceptance of a dogmatic system. Here again is an advance. He reflects the position of Protestant liberalism when he says that loyalty to Christ is the main thing, and that there must be room for change in doctrines. Not only this; the Christian college, he says, should lead the churches in making such changes. Perhaps this is the first time that the chief administrative officer of a distinctly evangelical college has openly declared for such freedom. Let presidents and faculties of denominational colleges, particularly professors of Bible, the philosophy of religion and religious education, take notice!

But let us beware of reading our own desires into President Soper's words. No one, especially no one who knows him, will doubt that he

means what he says. But has he formulated a policy that can accomplish what he sincerely advocates as an ideal? Let us see.

(1) His topic concerns "the Christian college," but all the details of his reasoning have to do with the *denominational* college. It is incredible that he should identify these terms, yet he gives no hint as to how he would differentiate the freedom that is appropriate in a generically Christian college from that which fits into the narrower purposes of a denominational institution. In an era when the Christian conscience looks upon denominationalism as a fault in our religious culture, does he regard it as proper for any academic institution to act as an organ of a denomination? He refers to the ethical necessity of being loyal to the purposes of founders and donors. *Prima facie* this implies both a defense of denominationalism and a refusal to take part in reinterpreting the Christian religion. What would the founders and donors to whom Ohio Wesleyan is indebted for its existence think of Dr. Soper's declaration that Christianity is becoming "different in form and in much that we have mistakenly clung to as if it were essential"? Not only does Dr. Soper ignore the problem that is here acutely involved; his insistence upon maintaining traditions is certain to be used as a support for denominational, as distinguished from Christian, restrictions upon teachers.

(2) Can the degree of freedom in which he believes be maintained in practice if teachers are required to hold an institutionally defined attitude towards Christ? Upon the one condition of holding this attitude, Dr. Soper would grant large scope for individual conviction openly expressed. "When his fundamental attitude to Christ is assured, I can see no limit to his freedom." This is new in evangelical colleges; it is bold, and it intentionally rebukes obscurantism. But, is it just what it is intended to be, and is it practicable under the conditions that Dr. Soper tacitly accepts? Do his words transfer the test of a professor from dogma to conduct, ideals, aspirations and quality of personality? They do not. For Dr. Soper, like those less liberal than himself, continues to talk of "views contrary to the position of a Christian college," and he would dismiss from the faculty a man who, upon the basis of newly discovered facts, departs from the standard religious attitude and point of view. It is difficult to believe that the new president of Ohio Wesleyan would "fire" a professor for following to its logical consequences any conceivable new light upon the life of Jesus—or new light upon our ignorance of this life—and indeed patience and gentleness are advised; yet sure decapitation also is advised. This provides first-class support and excuse for administrators who are willing to descend to the usual crude types of inquisition and of execution for heresy. Hence, it must be concluded that, though the intention be to rise above all censorship upon scholarship, nevertheless, the view of academic freedom now in question does not succeed in doing so. We have here only a liberalized application of the old ecclesiastical censorship of knowledge and opinion.

(3) Dr. Soper's theory assumes fixity in religion where there is reason to doubt that fixity can exist, and at this point he would have academic uniformity guaranteed by institutional policy. One would be safe in saying that, even if there be a changeless part of Christianity, neither he nor any one else can precisely formulate it. If he objects to so brusque a statement, let him state his formula, and then see what his fellow theologians, especially the historians, will do to him! Fixity or no fixity, there is danger both to academic freedom and to religious liberty in any attempt to employ as a test what has not been made precise by either historical or scientific investigation. The elusive truth can be so interpreted in each situation as to fit the administrative policy that then is dominant, or to fit the popular religion that it may seem expedient to placate.

(4) The theory assumes also that fixity in the teacher's fundamental religious attitudes can be achieved, that these attitudes can be adequately defined by his own introspection, that they can be clearly tested by a prospective employer and that then they can be guaranteed by the employing institution. The psychology here assumed is scarcely convincing, and the ethics likewise. A man often believes that he has reached finality in his attitudes, only to discover afterward that he has oversimplified a problem or that he has inadequately grasped some pertinent fact that bears upon it. Consider, then, the equivocal

position in which one is placed if one permits an institution to certify and guarantee his attitudes. He pledges his soul to others that he will act or not act in a certain manner at points that are beyond the control of any man who is honest in the finer details of his mind! Further, the standard sketched by Dr. Soper would make a college promote in the professorial mind processes that might at any moment become self-stultifying. Put together, now, the three assumptions—that there is a definable fixed part of Christianity, that the attitudes of intelligent and thinking men towards it may and should become fixed and that an institution can properly guarantee to the public the maintenance of this double fixity—put these together, and the insubstantial ground for even the liberal censorship that Dr. Soper approves will appear.

(5) Dr. Soper's discussion concerns "academic freedom in a Christian college." If only he had chosen to discuss "religious liberty in a denominational college"! For underneath his academic puzzle lies a question that concerns the quality of the religion that he takes for granted. Does he or does he not believe in a religion that holds itself free to do what it will with itself? Out of one's answer to this question flows one's actual view of academic freedom in a religious institution. Now, substantial religious freedom, and therefore substantial academic freedom, exists in an institution only to the extent that institutional influences are upon the side of unobstructed reexamination of anything that anybody desires to reexamine. The revisions and reconstructions within religion that may follow from reexamination must be accepted from religious motives; we should not wait to have them thrust at us in the name of academic freedom. The bottom question, then, is: Shall denominational institutions pursue the policy of encouraging creativity in the religious sphere? If they can not or will not do this; if, within their own special concern, which is religion, they are held in the grip of some dead hand, then they are—well, then they are held by it, and they should frankly assume the academic status that this implies. A self-recreating religion might achieve true academic freedom; no other kind of religion can.

George A. Coe

SPECIAL CORRESPONDENCE

THE PUBLIC JUNIOR COLLEGE IN MISSISSIPPI

In Mississippi the public junior college shares the honors with super-consolidation for being the spectacular thing in education.

In a state whose colleges are already overcrowded with what O'Shea's recent survey sets forth as a disproportionately large number of students (considering population and number of high-school graduates), the junior college is looked upon by many as an institution which may at once relieve this condition and provide a kind of education more nearly meeting youth needs and parent aspirations.

A recent bulletin of the state department of education, written by Knox M. Broom, provides glimpses of the situation.

(1) The public junior college began in 1922–23, when two county agricultural high schools—Hinds and Pearl River—undertook the first year of junior college work. Both now have two years of college work; both are recognized by the American Association of Junior Colleges, and Hinds County Junior College was approved by the Southern Association of Secondary Schools in 1929.

(2) In August, 1929, there were twelve public junior colleges supported by nineteen counties. The value of their plants was $3,057,197.06. In 1928–29 they enrolled 878 students. Mr. Broom says: "It is probable that as many again counties will be cooperating in the support of these institutions within the next twelve months."

(3) Mississippi's law authorizing the establishment of junior colleges, with either a municipal separate school district or a county or a group of counties as the taxing base, was prepared by schoolmen who had in mind national and regional standards for junior colleges. It incorporates these standards as to definition, criteria for organization, arrangements for inspection and control, arrangements for accrediting, entrance requirements, curricula, standards for the faculty, standards for level of student work, graduation requirements, records and requirements in material aspects.

(4) The new Junior College Commission, authorized by this law and set up by the state depart-

ment of education, has divided the state into thirteen public junior college zones. Since most of the municipalities in Mississippi are not large, the commission rather favors the establishment of junior colleges having groups of counties as the taxing bases.

That the public junior college in Mississippi faces both possibilities and pitfalls is undeniable. Some of the possibilities are: (1) The first two years of college at lower cost. Resourceful promoters of the junior college have "sold" the public on this. (2) The junior college is closer to the people—nearer home. This to some students is an advantage. (3) The junior college has not gone "collegiate"—yet. In Mississippi many parents have not given up what thinking people elsewhere are returning to—a serious questioning of the values of "collegiate" education. (4) The junior college is small. The malady of giantitis which has overtaken senior colleges and universities has not plagued it. Varied outlets for the aspirations of the individual student may be provided. It may make possible the learning situation of the great teacher—Mark Hopkins—on one end of the log and the boy on the other. (5) The public junior college here is a new institution, unhampered by traditions. The field is open for experimentation by those in whom sparkles pioneering imagination. It may prove an institution providing such unknown features on the college level, as: supervised instruction, a new curriculum, guidance and, in fine, a unique opportunity for the individual.

Yet there are pitfalls in the way to entrap the unwary. Some of them are: (1) Inadequate financial support—trying to run a junior college "on a shoe-string." (2) Quantity trained, instead of quality trained, instructors. (3) Less highly selected student personnel. (4) A failure of the State Junior College Commission to approach its problem in a professional instead of a political attitude.

JOSEPH E. GIBSON
Superintendent of City Schools
McCOMB, MISSISSIPPI

QUOTATIONS

THE ERADICATION OF ILLITERACY

MANY great and good causes are going begging in the federal city to-day, orphaned by lack of leadership.

The spirit of the people quickens these causes. Public sentiment supports them. But only brave, unselfish, steadfast leaders can beat down their enemies and fight these causes through to victory.

Such a cause is public education. Its important place in the foundation of popular government was clearly recognized by George Washington, and in his last message to Congress, Thomas Jefferson urged the Congress to continue to give its assistance to "the great purpose of education."

Pending before Congress is a wise and feasible proposal to give to the several states that powerful assistance in their educational work that only federal leadership can supply.

This is the proposal to establish a Department of Education, place at its head a secretary of education, and make him a member of the president's cabinet.

All existing federal agencies having to do with education would be consolidated in the new Department of Education. It would conduct research in education for the benefit of the several states. Assisting it would be a National Council of Education made up of the chief school officers of the states and territories.

In these days of alleged enlightenment five million children are growing up to be illiterates. And illiteracy to-day is one of the deadliest foes of the household of the nation.

Only a Department of Education, headed by a secretary of education, with a seat in the president's cabinet, can wage efficient war against the national menace and national disgrace of illiteracy.

That is why the pending education bill has been indorsed by the chief school officers of nearly every state in the union and by educational associations too numerous to mention.

The administration under which education is given an equality with agriculture, commerce and labor in the cabinet of the president is assured a high place in history.

Here is a great and good cause, quickened by the spirit of the people, strongly supported by public sentiment. All that is needed to fight it through to victory is the kind of a leader the people supposed Hoover to be.—*The New York American.*

SOCIETIES AND MEETINGS

THE 1929 ANNUAL MEETING OF THE COLLEGE ENTRANCE EXAMINATION BOARD

AN expansion of the scholastic aptitude test to include a mathematical aptitude section and the appointment of commissions to study the examinations in English and in modern foreign languages were the outstanding matters approved at the 1929 annual meeting of the College Entrance Examination Board, held on October 30 at Columbia University.

Reporting for the commission on scholastic aptitude tests, the chairman, Professor Carl C. Brigham, of the psychology department of Princeton University, summarized the work of the commission since its organization in 1925. In four years it has accomplished its purpose, Professor Brigham said, in the creation of test material more elaborate and more successful than any previously undertaken; and the commission now proposes to continue on a much reduced scale, devoting itself for the present to administration of the tests. By experimentation the types of test material have been reduced from nine to three, as follows: (1) The traditional type of antonyms, in which 100 test items are used; (2) the double definitions type, in which there are 50 items representative of varying degrees of thinking—"a gradual evolution from Professor Moore's work at Dartmouth"; and (3) the paragraph reading type, "invented by Professor Chapman of Yale." It was stated that the executive committee of the board hopes to publish a detailed report on the work of the commission, if a subvention can be obtained.

The board voted its approval of the plan of the commission to extend the scope of the scholastic aptitude test to be given in June, 1930, to include a section on mathematical aptitude designed "to make the test more generally useful for engineering colleges or for the selection of scientific students in colleges of the more general type." In the test of the first few years there were mathematical items along with the verbal items, but these were discarded because, in Chairman Brigham's words, "you shouldn't add apples and oranges." Borrowing from the statistical technique of Professor Spearman, of the University of London, the commission developed a new type of mathematical test and found a correlation of .80 between it and grades in first-year college mathematics. In including this new section as part two of the scholastic aptitude test to be taken by all candidates next June, the commission will provide for separate scoring and separate reporting of the results. It is hoped that "this supplementary test of thinking in mathematical symbolism may serve to reveal students who can profitably continue in the scientific fields and disclose those students whose proposed election of a scientific curriculum is the result of a verbal disability rather than a high degree of mathematical and scientific aptitude." It was further reported that the scholastic aptitude test was taken last June by 8,610 candidates—the largest number in the history of the commission. For the commission's expenses in preparing and scoring the 1930 test, the board voted $25,000.

Appointment was announced of a "commission to study the principles that should underlie the setting and reading of the comprehensive examination in English." Charles Swain Thomas, of the Harvard Graduate School of Education, is chairman and, in anticipation of his duties, he served as an English reader of the board last June. The other members of the commission are Professor Ralph P. Boas, of Mount Holyoke College; Professor Jack Crawford, of Yale University; Superintendent Oscar C. Gallagher, of the Brookline, Massachusetts, schools; Miss Caroline M. Gerrish, of the Girls' Latin School, Boston; Arthur W. Leonard, of Phillips Academy, Andover, Massachusetts; Professor Alice D. Snyder, of Vassar

College; Professor B. S. Monroe, of Cornell University, and Wilbur W. Hatfield, of the Chicago Normal College.

Copies were distributed of a description of the board's new examination to test competence in the use of the English language by foreigners, which is to be taken in various centers throughout the world by students desiring admission to American colleges and universities. The board authorized the preparation of this examination upon request of the American Association of Collegiate Registrars.

Professor Robert C. Corwin, of Yale, as chairman of the committee of review, reported on the wide desire for a revision of the modern foreign language reading lists and, upon his motion, the board authorized the appointment of a committee of five to investigate the advisability of a revision of all the modern language requirements.

Upon petition of several colleges on the Pacific Coast, the board voted to give an examination in physiology at examination centers in California, the institutions concerned to bear the expense. Dr. W. M. Hart, vice-president of the University of California, who attended the meeting, explained that the state physiology syllabus is to be the basis for the examination.

To conduct the business of his office and the examinations of June, 1930, Professor Thomas S. Fiske, of Columbia University, secretary of the board, was authorized to expend $224,800, with an additional sum of $9 for every candidate in excess of 22,750. In his report Secretary Fiske brought out that the actual expense to the board of each candidate last year was $11.09, or $1.09 more than he paid as a fee. The difference is made up from the board's funds, representing proceeds from sales of its literature and from investments. Dr. Fiske's report as treasurer showed total receipts for last year of $265,937 and disbursements of $252,081.

Reporting for the newly appointed custodians of the board, Head Master Wilson Farrand, of Newark Academy, told of having entered into relations with the National City Bank which has invested for the board its surplus funds of $100,000. The other custodians are President Mary E. Woolley, of Mount Holyoke College, and Professor Adam Leroy Jones, of Columbia University.

The meeting was in charge of the chairman, Henry Pennypacker, of Harvard University, and Secretary Fiske.

Officers for 1929–30 were elected as follows: *Chairman*, Henry Pennypacker, of Harvard; *vice-chairman*, Professor H. W. Tyler, of the Massachusetts Institute of Technology; *secretary* and *treasurer*, Dr. Thomas S. Fiske, of Columbia; *executive committee:* Professor R. C. Corwin, of Yale; Professor Radcliffe Heermance, of Princeton; Vice-Provost G. W. McClelland, of the University of Pennsylvania; President Frederick C. Ferry, of Hamilton College; President Ellen F. Pendleton, of Wellesley; Principal Alfred M. Stearns, of Phillips Andover Academy, and Principal W. E. Hill, of the Springfield, Massachusetts, Central High School.

RAYMOND WALTERS
SWARTHMORE COLLEGE

EDUCATIONAL RESEARCH AND STATISTICS

MATURATION UNITS FOR THE MEASUREMENT OF GROWTH[1]

THE purpose of this paper is to suggest a new system of units for the measurement of growth. For more than ten years my research activities have been focused upon a study of growth, particularly that type called learning, and the suggestions I have to make are based upon the knowledge gained from such studies. However, the new system has been found to apply, not only to educational measurements, but to all growth data secured under certain defined conditions whatever the biologic field.

In a growth situation there is *always* something which grows and there are *always* forces which bring about growth. The terms "nature" and "nurture" are in common use to describe these two elements of growth. Moreover, whenever the action of nurture on nature results in growth, the growing organism changes in certain particulars toward an ultimate state or condition which is called maturity. Thus,

[1] Read before the section on mental tests at the Ninth International Congress of Psychology, Yale University, September, 1929.

A PROPOSED DISCRIMINATION

Comparison of Growths under Variable and Constant Conditions

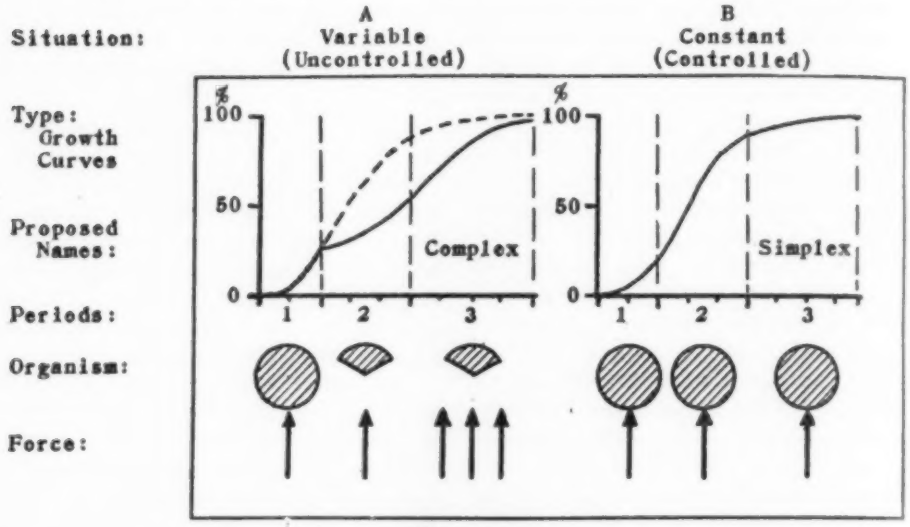

FIG. 1.

In both situations the shaded circles represent the immature growing organism, and the arrows represent the nurture forces bringing about growth. The total period of maturation is divided into three unequal parts. In situation A, during the second period the growing power of the organism is reduced to one third its original value, and during the third period the nurture forces are increased to three times the original value. The growth curve varies correspondingly and is called a "complex" curve. In situation B, both nature and nurture are constant throughout the period of maturation and the resulting curve is a graphic expression of *true* growth, the effect of nurture on nature. It is called a "simplex" curve.

ILLUSTRATION OF A SIMPLEX GROWTH CURVE

PERCENTAGES OF CHILDREN OF DIFFERENT AGES PASSING BINET TEST NO. 40, ABSURDITIES. FROM MENTAL AND SCHOLASTIC TESTS BY C. BURT 2674 NORMAL CHILDREN

Age	Percentage Passing
5.5	0.0
6.5	10.9
7.5	39.1
8.5	68.2
9.5	79.3
10.5	95.4
11.5	97.3
12.5	98.4
13.5	100.0

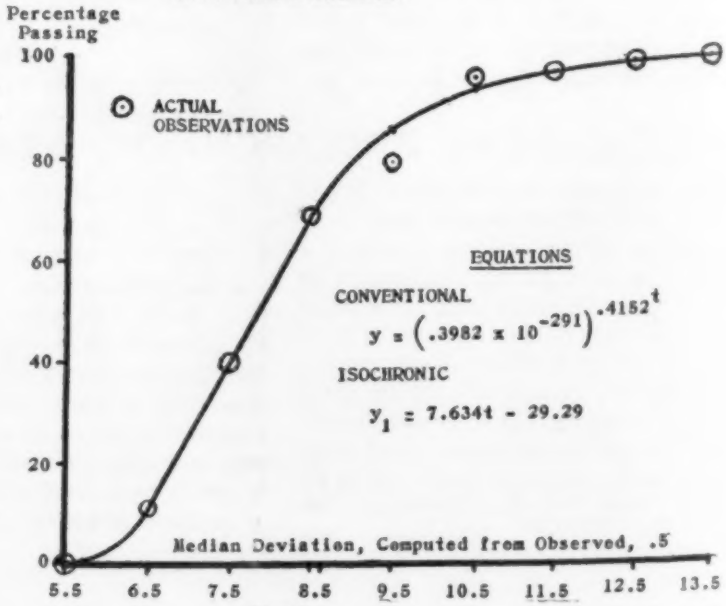

FIG. 2.

growth may be defined as progress toward maturity produced by the action of nurture on nature.

However, the possible changes in a growth situation are not limited to those produced by the action of nurture on nature.

For my purpose it is necessary to make a distinction between (1) the *effect* of *constant* nurture acting *uniformly* upon *constant* nature (Situation B) and (2) the *effect* of variations in either nature or nurture, or both, during the period of growth (Situation A). I suggest the terms "simplex" and "complex" to describe the two situations. For instance, in situation A, during the first third of the period of maturation, both the nurture and the nature are the same as in situation B, and the resulting curves are identical. During the second third of the time, however, the growing power of the organism is reduced to one third its former value and Curve B varies from Curve A (dotted line) correspondingly. During the last third of the growth period, the nurture is increased threefold. Again the growth curve varies correspondingly. The result as a whole is a "complex" growth curve.

Complex growth curves, such as A, may be considered as composed of two or more parts, each of which is a *portion* of some simplex curve. The laws of growth, and the effect of any one factor upon growth, are most easily determined in simplex situations. Therefore, from this point on, unless special comment is made to the contrary, all references to growth curves are to be taken as references to simplex curves only.

Note that the four essential characteristics of simplex growth are:

(1) Progress towards a defined maturity which takes place in
(2) An immature organism of constant nature when it reacts to

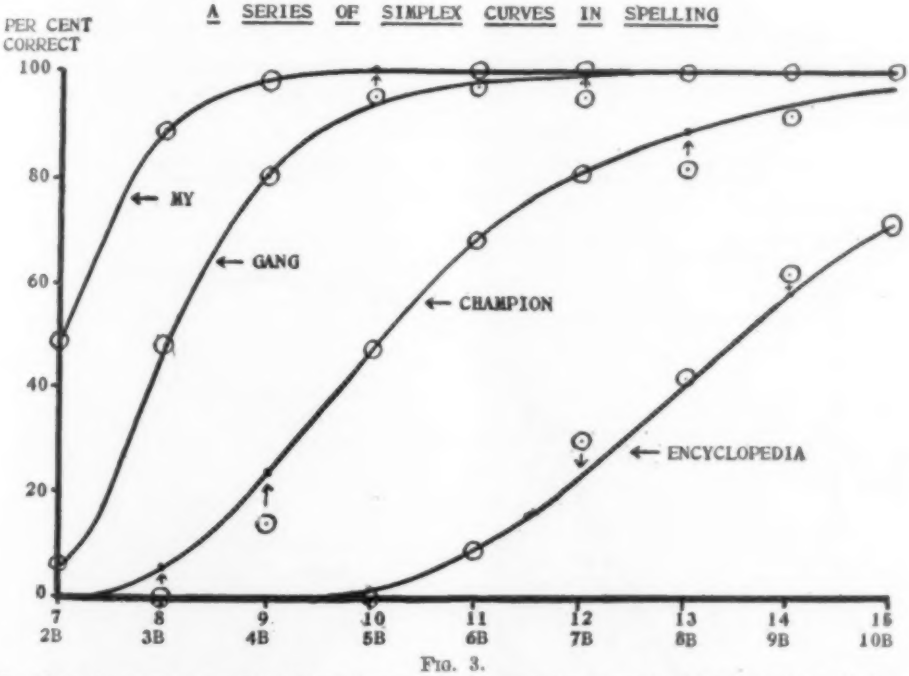

FIG. 3.

Based on the percentages of children in-grade-at-age, spelling correctly the words, "my," "gang," "champion," "encyclopedia." The curves as drawn are mathematically perfect simplex curves. Actual observations are shown by the small circles. The data are from an unpublished survey of the public schools of Hamtramck, Mich. These words were selected because they are not in the course of study and so are distorted very little by teaching. The curves differ chiefly because the words differ in complexity (difficulty).

(3) Constant nurture under
(4) Constant conditions.

It may be objected that conditions never *are* absolutely constant, and, therefore, that a *perfect* simplex curve is never obtained. This, of course, is true. However, the literature of growth is full of curves whose deviation from mathematically perfect simplex curves is, on the average, not more than two or three per cent. (Fig. 2). The concept is, therefore, a "practical" one.

In general, *all* simplex curves, from whatever source derived, may be precisely described by the formula

$$y = kg^{c^x}$$

deduced by Gompertz in 1825 from mortality statistics. g, c and k are three constants, x represents the variable time and y represents the measurement of growth at time x.

Thus the curve in Fig. 2 may be represented by the equation

$$y = (.3982 \times 10^{-291})^{.4152^t}$$

The computed and observed values differ but 1.1 on the average (Table 1).

TABLE I

COMPARISON OF OBSERVED AND COMPUTED VALUES

Observed Values, Percentages of Children of Different Ages Passing Binet Test, No. 40, Absurdities. From "Mental and Scholastic Tests," by C. Burt, 1922.

Computed Values from the Equation,

$$y = (.3982 \times 10^{-291})^{.4152^t}$$

Ages =	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5
Percentage passing	0.0	10.9	39.1	68.2	79.3	95.4	97.3	98.4	100.0
Computed values	..	.5	10.9	39.8	68.2	85.3	93.6	97.3	98.8	99.5
Deviations	+.5	0.0	+.7	0.0	+6.0	−1.8	0.0	+.4	−.5

Median Deviation .5 Mean Deviation 1.1

The use of isochrons, or the maturation units which it is the purpose of this paper to propose, reduces the exponential equation to a simple linear equation

$$y_1 = r_1 t + s_1$$

in which y_1, s_1 and r_1 are the isochrons of y, g and c, and t represents units of time. For instance, the equation for the curve in Fig. 2 in isochrons is

$y_1 = 7.634t - 29.29$. Median deviation .5.

Said in simpler language this means that, in general, all simplex curves are identical in form,

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Data from the Spelling of 76 Selected Words, by Children in Grade-at-Age, Superimposed to Make at Least Two Points in Each Curve Coincide. 650 Observations

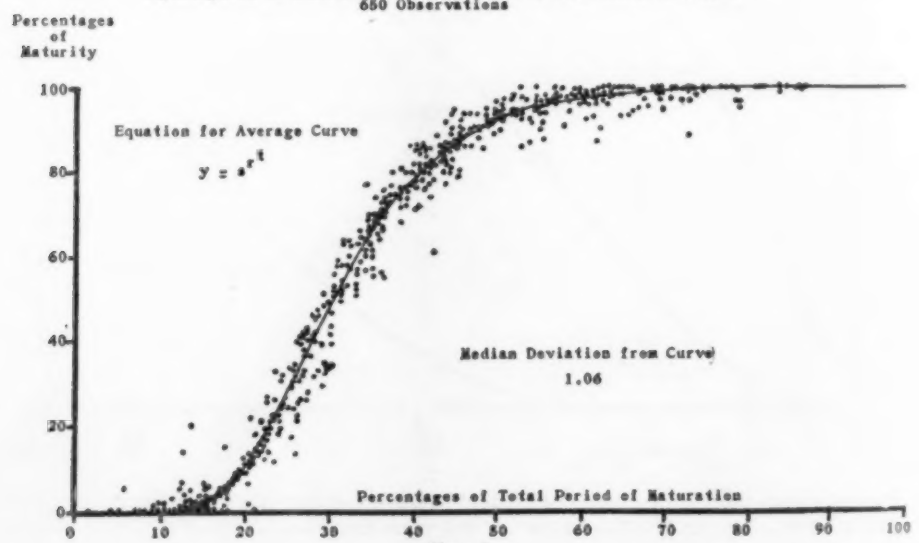

FIG. 4.

The method of superposition was as follows: For each curve two points were chosen as being the "best" two observations. The time required for development from one of these points to the other was found and a corresponding time scale computed. Finally all the time scales were drawn as a single straight line, the time axis in the figure, and each of the 650 observations placed in accordance with its own position with reference to its time scale.

differing only in the total time required for maturation. The truth of this significant generalization is evident when the members of any series of growth curves (Fig. 3) are superimposed by making the time scale for each curve such that the total period of maturation of all the curves is represented by one and the same straight line (Fig. 4).

In the figure, the results from the spelling of 76 different words by children in-grade-at-age have been superimposed, there being some 650 separate observations in all. The mean of the deviations of the 650 observations from the mathematically exact curve drawn in the figure is +.33 with regard to sign or 2.08 without regard to sign. (Fig. 5.)

Similar results have been obtained in every field for which data are available. Therefore throughout the remainder of this paper it will be assumed that, in general,[2] all simplex growth curves, whatever the biologic field from which they are derived, differ only in the total time required for maturation.

This generalization forms the basis upon which the new system of units of measurement rests. For if growth curves differ *only* in the total time required for maturation, then, when all other factors are held constant, *the effect of any single variable may be measured by the change produced in the total period of maturation;* or, more simply, by the ratios of the times required for identical *progress* in maturation.

For instance, suppose one desires to measure the relative difficulty of two Binet tests. Burt's data for test No. 20, Fingers, and test No. 44, Reading (six facts) given under constant conditions to identical children are available (Fig. 6).

It will be assumed that the environmental conditions with respect to the two tests are constant also. Then the only variable is the difference in the difficulty of the two tests. From Burt's data it is found that for the easier test, the growth from 20 per cent. to 80 per cent. of maturity is made in 1.8 years, while for the more difficult test 2.7 years are required. Therefore, one test is 1.5 times as difficult as the other. $(2.7 \div 1.8 = 1.5.)$

The method of measurement by time ratios is

[2] Note the "in general." The exact form of the curve is affected also by the form of the distribution of the nature elements, and by the rate of change of dispersion in the distribution; but, where variations from standard conditions occur, appropriate corrections are possible. Hence it seems desirable to regard all simplex curves as variants of a single pattern.

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Distribution of Deviations from Generalized Curve

Data from 76 selected words spelled by children in-grade-at-age. Curves superimposed to make at least two points coincide.

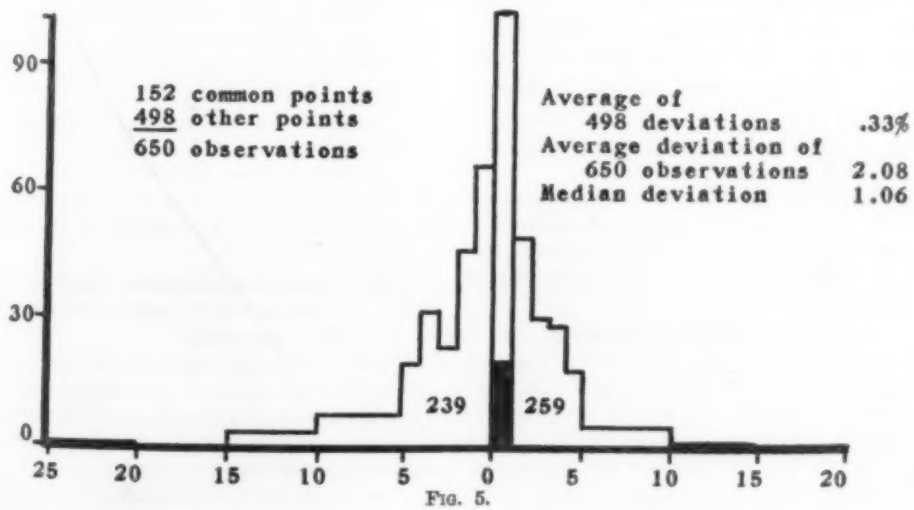

FIG. 5.

ILLUSTRATION OF MEASUREMENT BY RATIOS OF TIMES

Comparison of Relative Difficulty of Two Binet Tests (Burt)
A, Test No. 20, Fingers; B, Test No. 44, Reading, 6 Facts.
Limits, 20% to 80%. Children Constant. Environment Constant.
Tests Different. Relative Difficulty Equals Ratio of Times
Required for Equal Development = 1.5.

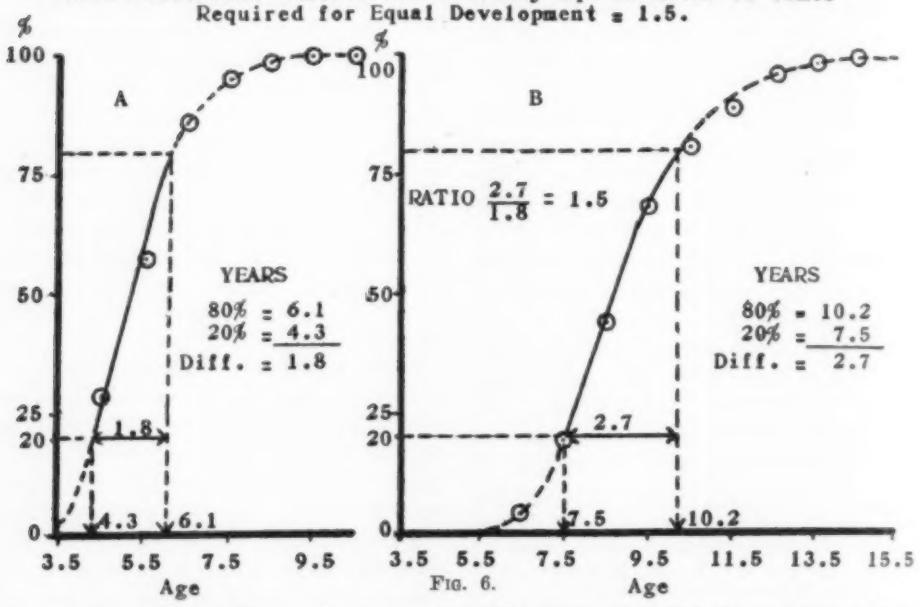

FIG. 6.

not new in psychology. IQ, or the ratio of mental age to chronological age, is such a measure, and in the illustration above, the ratio 1.5 is analogous to an IQ of the test. What I have done is merely to define the conditions under which measurement by time ratios may be made and to devise methods of making such measurement readily.

From a study of growth curves it has been found that their form is completely determined when the value of seven factors is known. These are:

(1) The *complexity* of the maturity towards which growth progresses.

Other things being equal, the more complex the maturity, the longer the period of maturation. Complexity is analogous to the conventional concept of "difficulty." It will be represented by the symbol, "C."

(2) The *quality* of the growing organism.

By quality is meant the power of the organism to respond to nurture. Other things being equal, the higher the quality, the shorter the period of maturation. Quality is analogous to IQ. It will be represented by the symbol, "Q."

(3) The value of the *nurture* forces acting.

By nurture is meant the environmental forces which cause growth. Nurture has two aspects, quality and amount. Other things being equal, the greater the value of nurture, the less the period of maturation. Nurture will be represented by the symbol, "E."

(4) The *level of development* achieved at the beginning of the growth period.

Other things being equal, the organism having the higher initial development will have the shorter period of maturation, but the relation is too complex to be presented here.

(5) The *maximum* value achieved at maturity.

The maximum achieved at maturity is measured in units and its value is determined by the units used; inches, centimeters, grams, etc. The value at maturity will be represented by the symbol, "k."

(6) The *form* of the distribution of individual differences among the nature elements of the growing organism.

Other things being equal, the distribution must be normal to produce a simplex growth curve.

(7) The *rate of change* in dispersion with time.

In general the individual differences among the nature elements increase with age. As a result the dispersion of the distribution of nature ele-

ments increases with age. A simplex curve is produced only when the rate of change of dispersion has a certain value. When the dispersion does not change with age, the simplex curve becomes an ogive. The relationship between rate of change in dispersion and the form of the curve is too complex to be presented here.[3]

For a "normal" distribution of nature elements, and the "natural" rate of change of dispersion, the most general form of the equation for the growth curve is

$$y = ks^{r^t}$$

in which

- y = the measurement of growth in units of magnitude at time, t.
- k = the maximum value at maturity.
- s = the initial development.
- r = the development per unit of time.

By analysis of growth data, confirmed by direct experiment in the laboratory, it has been found that one growth curve may be predicted from another. If the formula for one curve is taken as $y = ks^{r^t}$, the formula for predicting the times at which the other curve will attain any given level of development is

$$y = k_1 s_1^{r^{\left(\frac{EQ}{C}\right)}}$$

in which k_1 is the maximum value for the new curve at maturity, s_1 the initial development for the new curve, and E, Q and C are the values of nurture, quality and complexity, respectively. It is in this form that the generalization so briefly presented in Fig. 6, "simplex curves differ only in their periods of maturation," is used.

To facilitate computations a certain simplex curve has been chosen as standard (Fig. 7). The standard curve changes from an initial development of .000,000,01 of one per cent. of maturity to development of 99.98 per cent. of maturity in one unit of time. The time axis of this curve has been divided into one hundred equal parts, called *isochrons*. An isochron is one per cent. of the total time required for maturation from one of the above limits to the other. The name, isochrons, is given to emphasize the fact that in this system developments made in equal times are considered equal.

[3] For most cases of normal growth, the factors of the "form of distribution" and of "rate of change of dispersion" have a certain "natural" value and may be disregarded.

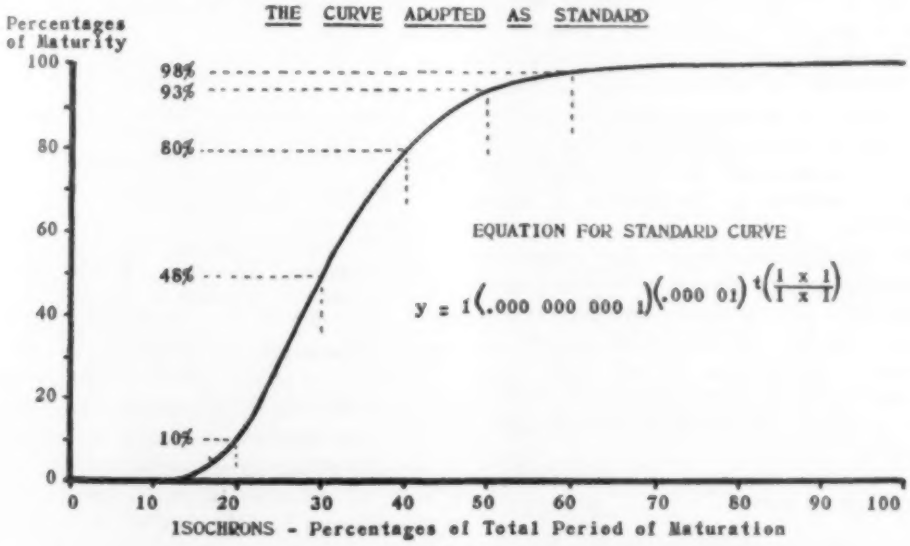

FIG. 7.

The basic theorem on which the use of isochrons is based is that developments made in equal intervals of the total maturation period are equal. The curve chosen as standard changes from an initial development of .000 000 01 of one per cent. of maturity to a final development of 99.98% of maturity in one unit of time. The base of this curve between these limits is divided into 100 equal parts called isochrons. The developments from 0 to 10 per cent., from 10 per cent. to 48 per cent., from 48 per cent. to 80 per cent., etc., are considered to be equal developments because each is made in 10 isochrons.

COMPARISON OF GRAPHS AND EQUATIONS IN CONVENTIONAL UNITS AND ISOCHRONS
DATA: BINET TEST, NO. 48, MEMORY DRAWING, BURT.
PERCENTAGES OF CHILDREN PASSING TEST AT VARIOUS AGES

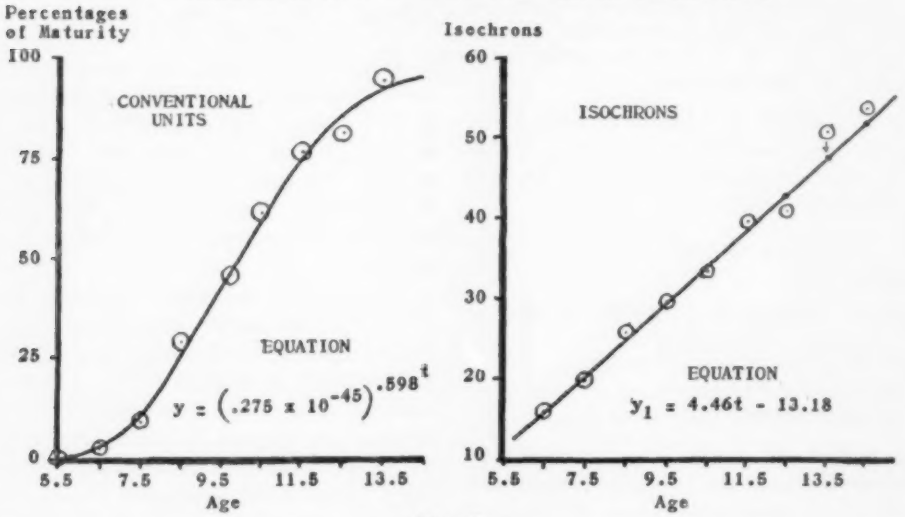

FIG. 8.

The use of isochrons converts the irregular "S" growth curve into a straight line, and the complex exponential equation into a simple linear equation in which for a simplex curve the amount of growth per unit of time is constant.

Thus, the development from 0 per cent. to 10 per cent. is considered equal to the development from 10 per cent. to 48 per cent., from 48 per cent. to 80 per cent., etc., since each is made in ten isochrons. A table has been constructed by means of which percentages of maturity may be readily converted to isochrons. Comparisons and computations are then made directly and easily in isochrons by the processes of simple arithmetic.

The value of isochrons may best be shown by comparing a given growth curve drawn in ordinary units with the same curve drawn in isochrons (Fig. 8). Ordinary units yield the conventional, autocatalytic, or "S," curve of increasing and diminishing returns. This may be very precisely represented by the exponential equation

$$y = (.275 \times 10^{-45})^{.598^t} \qquad \text{A. D.} = 1.6$$

which is unmanageable except by the processes of higher mathematics. In isochrons, the irregular S curve becomes a straight line which may be represented by the simple linear equation

$$y_1 = 4.46t - 13.18.$$

The mathematical properties of a simplex curve make possible the statement of relationships between factors and their effects in the terms of simple laws.

LAWS OF GROWTH

General Formula for Simplex Curve, $y = ks^{rt}$
(Gompertz, 1825)

Factor	Relation, for equal development	Law
Quality	Inversely	$Q_1 : Q_2 :: T_2 : T_1$
Environment	Inversely	$E_1 : E_2 :: T_2 : T_1$
Complexity	Directly	$C_1 : C_2 :: T_1 : T_2$

In other words, the use of isochrons, or *time* scores, seems to the author to reduce the complex phenomena of biologic growth to the simplicity of physical phenomena and makes possible the setting up of standard and comparable units of measurement in all biological fields. Accordingly, he believes that when the ideas, concepts and units presented in this paper are substantiated and perfected through the cooperation of the various scientists of the world, a new era of precise experimentation and control will dawn for all biological scientists.

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